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**IN THE DRAWINGS**

New Figure 2a is attached following page **12** of this paper.

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**REMARKS**

This Amendment responds to the Office Action mailed April 13, 2006 in the above-identified application. Based on the foregoing amendments and the following comments, reconsideration and allowance of the application are respectfully requested.

Claims 1-22 were previously pending in the application. By this amendment, claims 11-13 and 15 are amended solely for clarification and not to distinguish over the prior art of record. Claim 2 is cancelled without prejudice or disclaimer. Accordingly, claims 1 and 3-22 are currently pending, with claims 1, 10, 16 and 20 being independent claims. No new matter has been added.

The Examiner has objected to the drawings under 37 C.F.R. §1.83(a) because they fail to show the structure of Fig. 2a as described in the specification. Enclosed herewith is Fig. 2a for incorporation into the application. Apparently, Fig. 2a was inadvertently omitted from the application as filed. The addition of Fig. 2a does not constitute new matter because the subject matter of Fig. 2a is clearly described in the specification at page 5, line 15 to page 6, line 3. The permeable member 130, controller 132, test line 114, conduit 148, fixture 150 and heating element 154, as well as the relationship between these elements, are described in the referenced section. Further, test line 114, permeable member 130, conduit 148 and controller 132 are shown in Fig. 2 and are discussed in the corresponding description of Fig. 2 at page 4, line 30 to page 5, line 5. Thus, no new matter is added. Accordingly, entry of Fig. 2a and withdrawal of the drawing objection are respectfully requested.

The Examiner has objected to the drawings under 37 C.F.R. 1.83(a) because the heating element in thermal contact with a quartz member, as recited in claim 4, is not shown in the drawings. The heating element in contact with the permeable member is shown in new Fig. 2a. Accordingly, withdrawal of the objection to the drawings is respectfully requested.

The Examiner has objected to the specification because of several informalities. The informalities identified by the Examiner have been corrected, and withdrawal of the objection is respectfully requested.

The Examiner has objected to claims 11, 12 and 15 because of several informalities. Claims 11, 12 and 15 have been amended to correct the informalities, and withdrawal of the objection is respectfully requested.

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The Examiner has rejected claims 2 and 13 under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicant regards as the invention. Claim 2 has been cancelled without prejudice or disclaimer. Claim 13 has been amended to depend from claim 12, thereby providing an antecedent basis for "controlling the permeable member." Based on the above discussion, the amended claims are in full compliance with 35 U.S.C. §112, second paragraph, and withdrawal of the rejection is respectfully requested.

The Examiner has rejected claims 1, 2, 9-11, 14, 16 and 18 under 35 U.S.C. §102(b) as anticipated by Baret et al. (US 6,014,892). Claims 3-5 and 13 are rejected under 35 U.S.C. §103(a) as unpatentable over Baret in view of Bohm et al. (US 5,661,229). Claims 7, 17, 20 and 21 are rejected under 35 U.S.C. §103(a) as unpatentable over Baret in view of Saulgeot (US 4,773,256). Claims 8 and 19 are rejected under 35 U.S.C. §103(a) as unpatentable over Baret in view of Mahoney et al. (US 5,625,141). Claim 22 is rejected under 35 U.S.C. §103(a) as unpatentable over Baret in view of Saulgeot as applied to claim 20, further in view of Mahoney. Claims 6, 12 and 15 are indicated to be allowable if rewritten in independent form. The rejections are respectfully traversed.

Baret discloses a trace gas leak detector, as shown in Fig. 2, which includes a mass spectrometer 1, a secondary pump 2, a primary pump 3 and an inlet 6 for coupling to a part to be inspected. The inlet 6 is connected via a pipe 7 to the suction inlet of primary pump 3. A sampling member 11 for sampling the flow in the pipe 7 is situated on the wall of pipe section 7A, as shown in Fig. 5, and is connected via a duct 12 to mass spectrometer 1. Sampling member 11 is stated to have low conductance so as to enable measurements to be performed even when the pressure in pipe 7 is equal to atmospheric pressure (column 3, lines 12-20). The sampling member 11 may be a calibrated orifice through the wall of pipe 7 or 7A, or may be a porous membrane, or a film pressed against an orifice through the wall of pipe 7 or 7A and allowing the trace gas to diffuse through (column 3, lines 21-26).

Bohm discloses a test gas detector of a different type which utilizes a diaphragm that can be a polymer or a thin heated quartz glass window (column 2, lines 53-57).

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Saulgeot discloses an installation for detecting a leak of a trace gas which includes a turbomolecular secondary pump. As shown in Fig. 2, the turbomolecular secondary pump may include an intermediate inlet orifice 16 (column 2, lines 14-19).

Mahoney discloses a leak detector which includes a spectrometer tube, a diffusion pump, a forepump and a roughing pump (Fig. 1).

Claim 1 is directed to apparatus for a leak detection comprising a test line configured to receive a sample containing a trace gas, a mass spectrometer configured to detect the trace gas and having an inlet for receiving the trace gas, a first vacuum pump characterized by a relatively high reverse flow rate for light gases and a relatively low reverse flow rate for heavy gases, the first vacuum pump having a pump inlet and a foreline, the pump inlet being coupled to the inlet of the mass spectrometer, a foreline valve coupled between the foreline of the first vacuum pump and the test line, a trace gas permeable member coupled between the test line and the inlet of the mass spectrometer, the trace gas permeable member allowing the trace gas to pass and blocking other gases, liquids, and particles, and a second vacuum pump having an inlet coupled to the test line.

The trace gas leak detector disclosed by Baret is very different from the apparatus for leak detection as defined by claim 1. In particular, Baret discloses a sampling member that is a calibrated orifice through the wall of pipe 7, as shown in Fig. 5. Baret states that the sampling member 11 may also be a porous membrane, or a film pressed against an orifice through the wall of pipe 7 and allowing the tracer gas to diffuse through (column 3, lines 21-26). Baret contains no disclosure whatever of a trace gas permeable member that allows the trace gas to pass *and blocks other gases*, as required by Applicant's claim 1. Based on the disclosure of Baret, the skilled person would assume that the porous membrane would pass all gases more or less equally, absent a teaching to the contrary. In fact, the trace gas leak detector disclosed by Baret corresponds to the prior art leak detector described in the present application, where a differential pressure aperture separates the test port and the mass spectrometer. In summary, it is submitted that Baret does not disclose or suggest a trace gas permeable member coupled between the test line and inlet of the mass spectrometer, the trace gas permeable member allowing the trace gas to pass *and blocking other gases*, as required by Applicant's claim 1. For these reasons, claim 1 is clearly and patentably distinguished over Baret, and withdrawal of the rejection is respectfully requested.

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Claims 3-9 depend from claim 1 and are patentable over Baret for at least the same reasons as claim 1.

Claim 10 is directed to a method for a leak detection and requires, in part, passing a first portion of the pump gas through a trace gas permeable member to a mass spectrometer, the trace gas permeable member allowing the trace gas to pass and blocking other gases, liquids and particles. Claim 10 is clearly patentable over Baret for at least the reasons discussed above in connection with claim 1. In particular, Baret does not disclose or suggest a trace gas permeable member that allows the trace gas to pass and blocks other gases, as required by claim 10. For these reasons, claim 10 is clearly and patentably distinguished over Baret, and withdrawal of the rejection is respectfully requested. Claims 11-15 depend from claim 10 and are patentable over Baret for at least the same reasons as claims 1 and 10.

Claim 16 is directed to apparatus for leak detection and requires, in part, a trace gas permeable member, coupled between the test line and the foreline of a first vacuum pump, the trace gas permeable member allowing the trace gas to pass and blocking other gases, liquids and particles. As discussed above in connection with claim 1, Baret does not disclose or suggest a trace gas permeable member that allows the trace gas to pass and blocks other gases, as required by claim 16. For these reasons and for the reasons discussed above, claim 16 is clearly and patentably distinguished over Baret, and withdrawal of the rejection is respectfully requested. Claims 17-19 depend from claim 16 and are patentable over Baret for at least the same reasons as claims 1, 10 and 16.

Claim 20 is directed to apparatus for leak detection and requires, in part, a trace gas permeable member coupled between the test line and a midstage line of a turbomolecular vacuum pump, the trace gas permeable member allowing the trace gas to pass and blocking other gases, liquids and particles. The failure of Baret to disclose or suggest a trace gas permeable member as claimed is discussed above. Saulgeot discloses a leak detector, including a turbomolecular pump having an intermediate inlet. However, Saulgeot does not provide the teachings that are lacking in Baret with respect to a trace gas permeable member. Accordingly, claim 20 is clearly and patentably distinguished over Baret and Saulgeot, taken individually or in combination, and

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withdrawal of the rejection is respectfully requested. Claims 21 and 22 depend from claim 20 and are patentable over Baret in view of Saulgeot for at least the same reasons as claim 20.

Based upon the above discussion it is believed that claims 1 and 3-22 are in condition for allowance.

### CONCLUSION

A Notice of Allowance is respectfully requested. The Examiner is requested to call the undersigned at the telephone number listed below if this communication does not place the case in condition for allowance.

If this response is not considered timely filed and if a request for an extension of time is otherwise absent, Applicant hereby requests the necessary one month extension of time. If the fee occasioned by this response is not covered by an enclosed check, please charge any deficiency to Deposit Account No. 50-0895.

Respectfully submitted,



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